National Aeronautics and
Space Administration

Jet Propulsion Laboratory
California Institute of Technology
Pasadena, California

Open Archival Information System Interoperability Framework (OAIS-IF)

Task Status

CCSDS Data Archive Interoperability
(DAI) Working Group
15-19 October 2018

Steve Hughes

Current Status

- The OAIS-IF model has been captured and is being managed using the Cornerstone Framework (NPO-49832).
  - *The entire OAIS-RM Information Model has been captured.*
  - *The entire OAIS-RM Functional Model has been captured*
  - *Additional functional elements have been captured from PDS4, RDA, …*
  - *A CCSDS White Book is being auto-generated.*

- The model has been reviewed several times
  - *CCSDS (DAI) Working Group, Peter Shames.*
  - *The conclusion is that there is more than enough material for a Blue Book*

- The model has been updated for the Fall CCSDS meeting.
  - *The emphasis is to reorganize the material for a blue book.*
  - *Prototype development has started*

Proposed FY19 Work

- Continue as editor of the OAIS-IF Blue Book.
  - *Prepare the OAIS-IF Blue Book for review at the Fall '18 and Spring '19 CCSDS meetings of the Data Archive Interoperability (DAI) Working Group.*
  - *Update the Blue Book based on review feedback.*
  - *Manage the CCSDS approval Blue Book process.*
- Lead development of the OAIS-IF prototype
- Continue support of CCSDS Standard Reviews
  - *ISO 14721:2012 (OAIS RM) - 2nd five year review*
  - *ISO 16363:2012 (CCSDS 652.0-R-1) - Audit and certification of trustworthy digital repositories.*
  - *Requires one 2 hour meeting per week.*

Prior Accomplishments

- CCSDS Data Archive Interoperability (DAI) Working Group (CCSDS Fall 2017 Technical Meetings)
  - *Reviewed model*
  - *Incorporated review feedback*
- CCSDS Data Archive Interoperability (DAI) Working Group (CCSDS Spring 2018 Technical Meetings)
  - *Reviewed model*
  - *Incorporated review feedback*

Prior Accomplishments

- Created a draft model of the Data Archive Architecture
  - *Adopted concepts from the following tasks and source documents.*
    - Data Archive Ingest (DAI) WG Report to the CCSDS Management Council (CMC), Figure 2: Notional Data Archive Architecture, March 2017
    - DAI Architecture Analysis, SEA System Architecture WG, Slide 16, Alternative Standardized Archive System Architecture Deployment Option (3), May 2017
    - Planetary Data System PDS4 Information Model Specification, Version 1.8.0.0, March 2017.
    - Planetary Data System - PDS4 System Architecture Specification September 1, 2013, Version 1.3.
    - CCSDS Reference Architecture for Space Information Management (RASIM) CCSDS 311.0-M-1
    - Reference Model for an Open Archival Information System (OAIS), ISO 14721:2012.
    - The Semantic Planetary Data System, PV2005, Edinburgh, November 2005.
    - PDS-D – The Planetary Data System Distribution Subsystem. Lunar and Planetary Science XXXIV (2003)
    - The Planetary Data System - Distributed Inventory System, IEEE Forum on Research and Technology Advances in Digital Libraries, 1999. Proceedings.

Prior Accomplishments

- Utilize the Cornerstone Framework (NPO-49832) for model capture and management.
  - *Cornerstone is the framework used to capture and manage the PDS4 Information Model.*
  - *Provides a framework for model-driven information system development*
  - *Maintains Information Model independence.*
- Generated architectural documents for CCSDS DIA review
  - *Information Model Specification Document*
  - *UML Diagrams*
- Held review of model with P. Shames
  - *Reviewed UML and Specification Document*
  - *Updated model and documents based on feedback*

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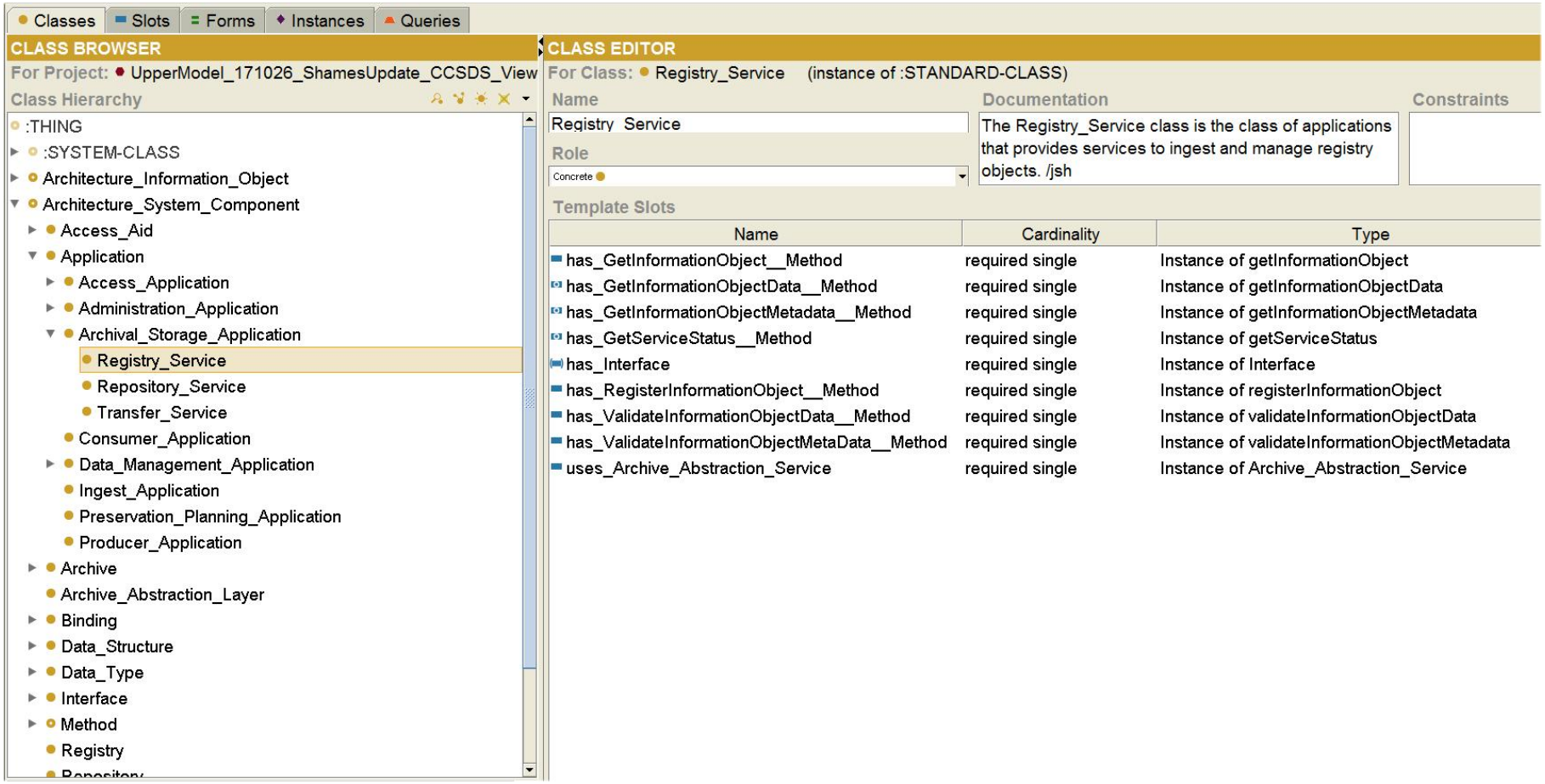
Some System Components



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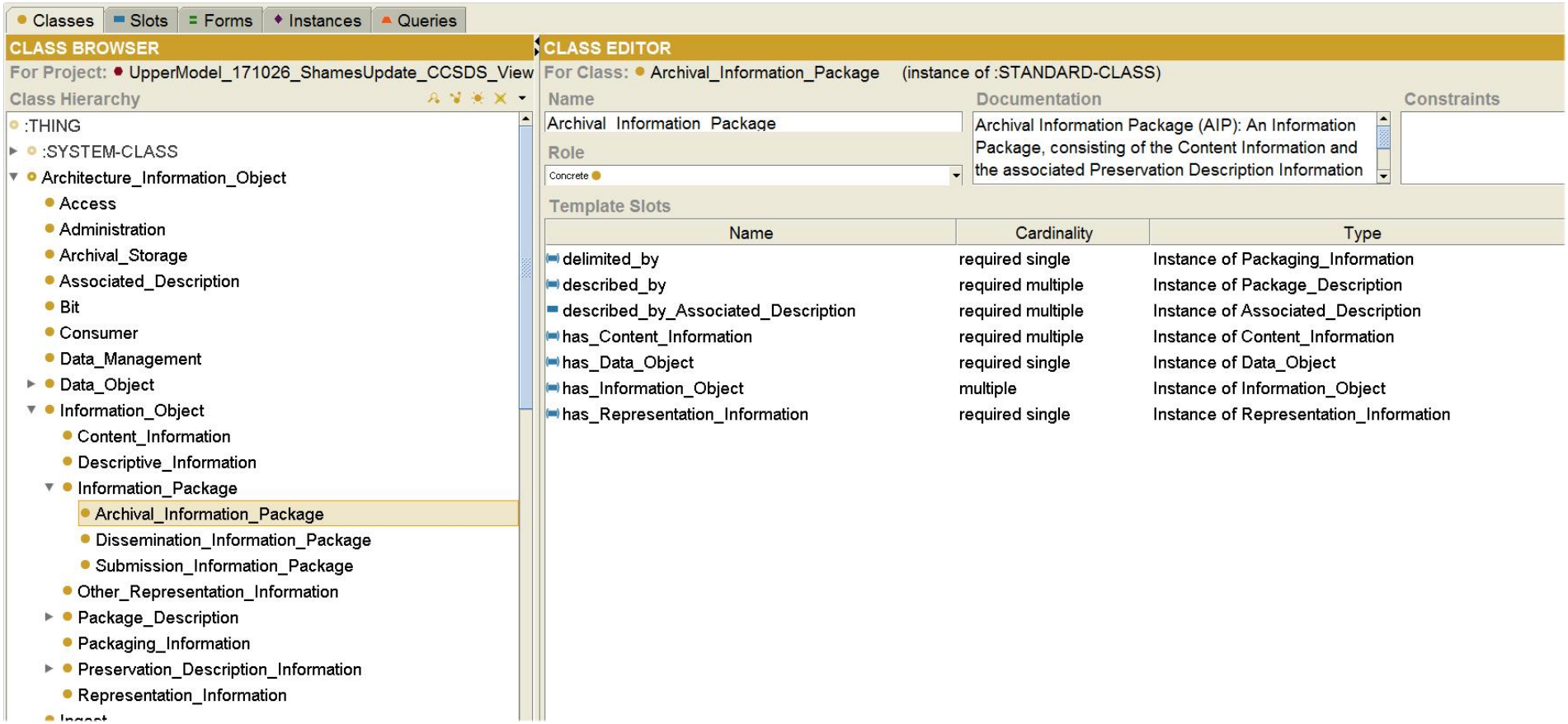

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- Chris Mattmann - JPL Principal Data Scientist, USC Adjunct Associate Professor
- Costin Radulescu - JPL's Multimission Ground System and Services (*MGSS*) Peter Shames - Project –CCSDS Systems Architecture (SAWG) Chair
- Mike McAuley - Life Storage of Mission Data (LSMD) task
- Laura Jewell - Engineering Data Management (EDM) task

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Thank You

Questions and Answers

PDS homepage: https://pds.nasa.gov/

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